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ABSTRACT

Intended to aid teachers in making systematic decisions regarding the use of research and development products, a check list has been constructed that compares products in terms of their predicted effects on school and classroom practices. A copy of the check list is included in the report. (LH)

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# SELECTING R & D PRODUCTS TO MEET SCHOOL NEEDS

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November 1977

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SELECTING R & D PRODUCTS TO MEET SCHOOL NEEDS


## ABSTRACT

When R & D sources are searched in response to school requests for potential solutions to local problems, a number of optional alternatives are usually revealed. School staffs must then consider in detail the appropriateness of the match of several different products to their situation. As an aid to systematic decision making, a product checklist has been developed. The checklist makes possible a comparison of each product with those of other products, including those currently in use, in terms of forecast effects on school and classroom practices.

## SELECTING R & D PRODUCTS TO MEET SCHOOL NEEDS

In the course of selecting local instructional problems, school teaching staffs typically request that a search be made of research and development sources for the location of information which may be relevant to these problems. The search request usually includes systematically organized information about the school and its community, the student population served, and an analysis of factors bearing on the problem. In turn, the central search agency attempts to match the characteristics of the problem to those of various R & D outcomes it finds in a "knowledge base." The outcomes reviewed in finding a match include the results of research studies, procedures and principles derived from them, developed products designed for student use (texts and other materials), teacher manuals and teacher education materials.

Despite earnest attempts at precise communication on the part of the school and the search agency, exact matches of desired problem solutions and R & D outcomes can rarely be found on the basis of a first try. Instead, the search agency is usually able to suggest several alternatives, or "options," any one or any combination of which are seen as possible contributions to the ultimate solution wanted. Subsequent to the receipt of such a report, the local school staff must then undertake a further narrowing of these possibilities, weighing the advantages and disadvantages of each, and considering in each case the degree to which a most likely solution has been suggested.

### Purpose of this Report

The situation of considering alternative R & D possibilities has occurred in a number of Florida elementary schools, as a consequence of their

receipt of reports from Options from R & D (ORD), a unit of the Florida Educational R & D Utilization Project. Over the past several months, this unit has operated as a centrally located search agency, and has made reports to these schools regarding R & D options in areas of basic skills instruction (reading, language arts, mathematics).

The present report contains a suggested procedure for school staffs to follow in giving systematic consideration to various R & D products which may be described by ORD in response to their requests for search. An essential part of the procedure involves the use of a Product Description Checklist, whose features will be described. Following the checklist itself, an outline is given of an exercise for staff training, employing a prototype example.

## Development of a Product Checklist

A number of possible methods suggest themselves as ways of comparing R & D products with each other, or with materials in current use in classrooms. However, in the context of a problem solving process, it would seem most desirable to focus attention upon the effects that a product may be foreseen to have on various aspects of school and classroom operations. The physical features of a product, as well as its characteristics as a teaching instrument, may make some contribution to its attractiveness. But the considerations which ultimately determine a choice are likely to pertain to what has to happen when the product is used in classrooms. It is these characteristics which are given emphasis in the following paragraphs.

### Evidence of Validation

What evidence is there that the product works well, particularly in

the sense of contributing to student learning? For example, if the product is a system for teaching reading, has it been shown to raise the achievement scores of pupils like those who attend the particular school currently considering the product?

Classroom Organization

What kind of classroom organization does the newly considered product require or favor? Is the product designed particularly for team teaching or self-contained classrooms? What sort of pupil grouping is favored or made possible by the new product? Does it involve individual student work, or the use of tutors? Does it require the use of "learning centers" or other specialized space? These features may be compared with those currently in use, in order to indicate the kinds of changes that would likely be necessary if the new product were to be adopted.

Student Activities

Another set of characteristics to be compared with current practices is the activities of students. What kinds of pupil activities are emphasized by the new product? Do the students need to spend considerable time in recitation or drill? Are audio-visual materials given prominence? Do students recite orally, or do they respond to workbooks? How often are tests or other observations used to assess pupil progress?

Teacher Activities

A considerable range of teacher activities may need to be given consideration in comparing a new product with those currently in use. These characteristics include the planning of lessons and the special preparations that may be required. It is of interest to compare also the kinds of teacher

presentation, questioning, and record-keeping.

Materials

This category simply notes the kinds of materials making up the new product, as compared with the kinds available in systems currently in use. Various types of materials are included in this comparison - books, workbooks, kits, filmstrips, among others.

Administration

Sometimes, products may require provision for changes in the role of the principal or other specialized personnel of the school staff. Although this sort of change is not frequent, it is obviously of importance that such change be taken into account when it can be foreseen.

Parental Involvement

It is not uncommon for an R & D product to emphasize a type of parental involvement which may or may not be prevailing in current school operations. Parents may assist in instruction, in record keeping, and of course by providing support via parental organizations.

Strategy for Learning

Besides the specific effects which can be foreseen, a more general description may be needed of the rationale for student learning. For example, a program for reading which utilizes stories containing locally familiar environmental features (animals, plants) represents a particular approach to student learning which may differ considerably from that of other products.

Objectives

Products are likely to differ from each other in terms of their learning objectives. It is useful, therefore, to make comparisons along these

lines. To what extent does the product under consideration emphasize specific cognitive skills? Does the product attempt to foster general cognitive development? Does it have affective objectives?

## A Checklist for Making Comparisons

A checklist which incorporates items of the sort previously described is contained in three following pages.

## A Training Exercise

A training exercise may be conducted as illustrated by prototype materials contained in the following pages. In this simulation exercise, it is assumed that the Piney Bluff School has been interested in improving the spelling achievement of its pupils. Its current Spelling Program has been described ("Description of the Current Piney Bluff Spelling Program"). The school staff has received from ORD a report on some alternative products which might be considered in arriving at a solution to the school's problem ("Report to Piney Bluff County Teacher Education Center"). The school staff has then undertaken to complete a Product Description Checklist on a product called "individualized Spelling and Writing Patterns" (a "real" product published by Follett Publishing Co., Chicago, Illinois).

A training exercise might begin by asking students to review these prototype materials, in order to become fully acquainted with the kinds of questions considered in the Product Description Checklist. Following this, the students (teachers, other educational staff members) can proceed to use the checklist to describe a product which is actually under consideration for adoption by a school.

The comparisons made evident by the checklist are expected to make it possible for a school staff to give well-considered answers to the kinds of

questions contained in the following sections.

Matching School Objectives to a Product

Do the objectives (goals, purposes) of this educational product match:

(1) the specific changes and goals desired as solutions to the school's problem?

(2) the features of a solution desired by the school staff?

Matching the Product to the Local School

Do the materials and approach of this educational product match:

(1) the needs of the pupils of this school?

(2) the teachers of this school?

(3) the principal of this school?

(4) the classroom organization?

(5) the physical resources of the school?

(6) the district administration?

(7) the parents and community?

(8) the resources for implementation (financial and human)?

# PRODUCT DESCRIPTION CHECKLIST

Name of Product _____

Targeted Grade for Product _____

What would be changed if this product were used? Use the checklist to make a comparison of features.

NOTE: Check only if applicable; if not, leave blank.

| | Practice Using Current Materials | Projected Practice Using Product |
|---|---|---|
| **Evidence of Validation** | | |
| 1. —Product shown effective? | _____ | _____ |
| **Classroom Organization** | | |
| 1. —Team teaching | _____ | _____ |
| —Self-contained classroom | _____ | _____ |
| —Other (write in) | _____ | _____ |
| 2. Pupils grouped | | |
| —by initial ability scores | _____ | _____ |
| —whenever new instructional needs are determined | _____ | _____ |
| —other (write in) | _____ | _____ |
| 3. Individual student work | | |
| —occasionally | _____ | _____ |
| —prescribed following diagnosis | _____ | _____ |
| —other (write in) | _____ | _____ |
| 4. Tutoring | | |
| —by older students | _____ | _____ |
| —by peers | _____ | _____ |
| —by community volunteers | _____ | _____ |
| 5. Use specialized space | | |
| —learning center(s) | _____ | _____ |
| —media center | _____ | _____ |
| —other (write in) | _____ | _____ |
| **Student Activities** | | |
| 1. Principal pupil activity | | |
| —recitation | _____ | _____ |
| —drill exercises | _____ | _____ |
| —listening to teacher | _____ | _____ |
| —workbooks | _____ | _____ |
| —audio-visual use | _____ | _____ |
| —"silent reading" or text reading | _____ | _____ |
| —other (write in) | _____ | _____ |
| 2. Student production(s) | | |
| —copied words, sentences, etc. | _____ | _____ |
| —completed workbook exercises | _____ | _____ |
| —written themes, stories | _____ | _____ |
| —oral "telling" | _____ | _____ |
| —other (write in) | _____ | _____ |

| | Practice Using Current Materials | Projected Practice Using Product |
|---|---|---|
| 3. Taking "tests" | | |
| —at end of each topic | _____ | _____ |
| —at end of semester or year | _____ | _____ |
| —to test mastery of each objective | _____ | _____ |
| —other (write in) | _____ | _____ |
| **Teacher Activities** | | |
| 1. Planning lessons | | |
| —assisted by teachers' manual | _____ | _____ |
| —independently done | _____ | _____ |
| —other (write in) | _____ | _____ |
| 2. Requires special preparation of lessons | | |
| —with materials, objects | _____ | _____ |
| —with audio-visual devices | _____ | _____ |
| —with kits of papers | _____ | _____ |
| —other (write in) | _____ | _____ |
| 3. Giving content information | | |
| —a great deal | _____ | _____ |
| —infrequently | _____ | _____ |
| —other (write in) | _____ | _____ |
| 4. Questioning | | |
| —principally factual | _____ | _____ |
| —frequently for problem-solving | _____ | _____ |
| —other (write in) | _____ | _____ |
| 5. Record-keeping on pupil achievement | | |
| —frequent and detailed | _____ | _____ |
| —moderate | _____ | _____ |
| —other (write in) | _____ | _____ |
| 6. Testing of pupils | | |
| —for placement in instr. groups | _____ | _____ |
| —at end of major topics | _____ | _____ |
| —at end of semester/year | _____ | _____ |
| —other (write in) | _____ | _____ |
| **Materials** | | |
| 1. —Books | _____ | _____ |
| 2. —Workbooks, sheets | _____ | _____ |
| 3. —Films/filmstrips/slides | _____ | _____ |
| 4. —Audio tapes/records | _____ | _____ |
| 5. —Kits | _____ | _____ |
| 6. —Pupil record-keeping system | _____ | _____ |
| 7. —Diagnostic/placement tests | _____ | _____ |
| 8. —Teacher's Manual | _____ | _____ |
| 9. —Other (write in) | _____ | _____ |
| **Administration** | | |
| 1. Principal's role | | |
| —team leader | _____ | _____ |
| —providing logistic support | _____ | _____ |
| —other (write in) | _____ | _____ |
| 2. Special provisions of management (write in) | _____ | _____ |

| | Practice Using Current Materials | Projected Practice Using Product |
|---|---|---|
| Parental Involvement | | |
| 1. Assist in instruction | | |
| —as aides | _____ | _____ |
| —as tutors | _____ | _____ |
| —other (write in) | _____ | _____ |
| 2. Assist in clerical work | | |
| —testing | _____ | _____ |
| —record keeping | _____ | _____ |
| 3. General support | | |
| —by parental organization(s) | _____ | _____ |
| —by community organization(s) | _____ | _____ |
| —no special provisions | _____ | _____ |
| —other (write in) | _____ | _____ |

Model and Strategy for Learning (describe briefly)

_____ _____

_____ _____

_____ _____

Objectives (write in as brief phrases)

1. Cognitive skills _____ _____

_____ _____

_____ _____

_____ _____

_____ _____

2. General cognitive development _____ _____

_____ _____

_____ _____

_____ _____

_____ _____

3. Attitudinal _____ _____

_____ _____

_____ _____

_____ _____

_____ _____

## DESCRIPTION OF THE CURRENT PINEY BLUFF SPELLING PROGRAM

The Smith-Jones Spelling Series is designed to provide each student with a hardback book with 60 lessons. Each lesson is divided into five learning activities, each activity designed to take 15 to 20 minutes of class time. A teacher's manual describes the procedure for each activity. A typical lesson sequence is as follows:

Lesson 1: Teacher introduces a list of 14 to 24 spelling words. These words are selected from the Dolch Basic Words List, and are selected on the basis of subject matter or spelling pattern. A written paragraph with all of the words embedded in it is provided to cue the meaning and syntax of the spelling words. The students read the paragraph (aloud in primary grades, silently in elementary grades) and write their spelling words five to ten times.

Lesson 2: Spelling words are used in answering fill-in-the-blank sentences, or questions pointing out special features of the word.

Lesson 3: Practice test. The word list is called out by the teacher and the children write the words on a numbered paper.

Lesson 4: Practice tests are returned and pupils rewrite and practice spelling the missed words. Another exercise using the spelling words is provided which tends to present rules on syllabication, affix spellings and meanings, and silent letter rules.

Lesson 5: A final test is given in the same manner as the practice test. The grade on this test is recorded. No further instruction on missed words is given, and the entire group proceeds to the next lesson.

The Johnson Spelling Inventory is administered to all students at the beginning of the school year. Using the information from the inventory each student is placed in the low, middle or high ability group in his grade. Teacher's assess which basal text (1-6) is to be used by the group. A fourth grade class typically has a low group using the first level speller, a middle group using a third level speller, and a high group using the fourth level speller. Because of the many lessons provided in each level's basal text, no high group proceeds to a higher level text.

September 29, 1977

Report to

Piney Bluff County Teacher Education Center

(Mary Folsom, Linker)

on

Request for Search, Piney Bluff Elementary School

Prepared by: Options from R & D, Educational R & D Utilization Project

Robert M. Gagné, Director

John Moscicki, Margaret Dyreson

Introduction

We understand the problem identified by the Piney Bluff Elementary School to include these basic factors: students fail to adequately master spelling skills, students continuously make spelling errors in their daily assignments, and students perform below average in spelling on statewide testing.

Our search has examined a number of solutions to your problem involving spelling abilities in the students at Piney Bluff Elementary School. As we have previously stated, we are particularly concerned with the efficacy of the solutions we report. We feel that the approaches described in a subsequent section of this report are effective programs; should we receive information about additional possible solutions to your problems we will report them as soon as possible.

We believe that Linkers and School Facilitators will need to devote a good deal of their attention to the following: (a) examining in detail how closely the goals of the product under consideration match those of the identified problem; and (b) seeking aid and consultative assistance from schools which serve as demonstration centers, from DOE consultants, and from knowledgeable university personnel.

General

Before describing specific R & D products, we think it desirable to report a couple of general research findings concerning instruction in basic skills areas.

Studies of "what makes a difference" in the achievement of basic skills in the elementary school reach conclusions having substantial consensus in the educational research community. The factors in the classroom setting which are positively related to achievement are (1) a complex which may be named academic engaged time, defined as the amount of time pupils spend in active learning of the subject (reading and arithmetic); and (2) a second complex called direct teaching. The latter includes the factors of teacher determination of objectives and sequence, frequent teacher monitoring and assessment of student progress, and others of a related nature. In such classrooms, teachers are both encouraging and demanding. Specific programs which encourage and facilitate teacher and student activities reflecting these positive factors are more likely to be successful than those which do not include these factors. It is also

likely that the experience of success by students will aid in the establishment of positive attitudes toward school work.

Some Options from Research and Development

The nature of the solution you have described involves three aspects: an individualized and manageable spelling program, the use of placement tests or test-study-test procedures, and a program which is relevant and interesting which will help to motivate students. The solutions we have selected and described are directed towards these three characteristics.

Programs for spelling instruction.

1. BASIC SPELLING. This is a very carefully structured program which strongly emphasizes the relation of sound and symbol, letter patterns that spell sound patterns, and letter patterns that spell various forms of words. Basic Spelling makes extensive use of placement and assessment testing, individualized and other forms of instruction, multi-sensory learning strategies, and attractive materials designed to capture the student's interest in spelling, teaching the use of spelling in general school work. Basic Spelling has been extensively field tested and demonstrated as an effective instructional system.
2. MICHIGAN PROGRAMMED SPELLING. Michigan Programmed Spelling is an instructional program which can be used for students in first grade through college. The use of individualized or small group instruction

is made possible through the self-paced workbooks and exercises as well as the use of audio cassettes which serve each learner's particular pace and ability. Diagnostic and placement testing are utilized to determine the entry level of students as well as each student's individual needs. Extensive practice of useful applications of the spelling words through sentences, crossword puzzles, and other exercises is included in the design of the program, to help students develop versatility with spelling and word use. This program has been tested in actual classrooms and has been demonstrated to be an effective instructional program.

3. INDIVIDUALIZED SPELLING AND WRITING PATTERNS (ISWP). This product is an instructional program which utilizes placement testing and pretesting of students to enter individualized or small group instruction. Management of the instruction is assisted by audio cassette for each student throughout the program, and the upper levels of the program have diagnostic tests on audio cassettes. By focusing on each student's particular learning problems in spelling and word usage, ISWP attempts to provide the best instruction possible for each student. ISWP has been developed and field tested in accord with the National Institute of Education's guidelines.

PRODUCT DESCRIPTION CHECKLIST

Name of Product Individualized Spelling and Writing Patterns

Targeted Grade for Product Grades 1-6

What would be changed if this product were used? Use the checklist to make a comparison of features.

NOTE: Check only if applicable; if not, leave blank.

| | Practice Using Current Materials | Projected Practice Using Product |
|---|---|---|
| **Evidence of Validation** | | |
| 1. —Product shown effective? | No | Yes |
| **Classroom Organization** | | |
| 1. —Team teaching | | |
| —Self-contained classroom | ✓ | |
| —Other (write in) | | Designed for any classroom |
| 2. Pupils grouped | | |
| —by initial ability scores | ✓ | ✓ |
| —whenever new instructional needs are determined | | ✓ |
| —other (write in) | | |
| 3. Individual student work | | |
| —occasionally | | |
| —prescribed following diagnosis | | ✓ |
| —other (write in) | | |
| 4. Tutoring | | |
| —by older students | | |
| —by peers | | |
| —by community volunteers | | |
| 5. Use specialized space | | |
| —learning center(s) | | |
| —media center | | ✓ |
| —other (write in) | | |
| **Student Activities** | | |
| 1. Principal pupil activity | | |
| —recitation | | |
| —drill exercises | ✓ | ✓ |
| —listening to teacher | ✓ | |
| —workbooks | | ✓ |
| —audio-visual use | | ✓ |
| —"silent reading" or text reading | | |
| —other (write in) | | |
| 2. Student production(s) | | |
| —copied words, sentences, etc. | ✓ | ✓ |
| —completed workbook exercises | ✓ | ✓ |
| —written themes, stories | | |
| —oral "telling" | | |
| —other (write in) | | |

| | Practice Using Current Materials | Projected Practice Using Product |
|---|---|---|
| 3. Taking "tests" | | |
| —at end of each topic | | |
| —at end of semester or year | | |
| —to test mastery of each objective | | ✓ |
| —other (write in) | Once a week | |
| **Teacher Activities** | | |
| 1. Planning lessons | | |
| —assisted by teachers' manual | ✓ | ✓ |
| —independently done | | |
| —other (write in) | | Management plan |
| 2. Requires special preparation of lessons | | |
| —with materials, objects | | |
| —with audio-visual devices | | ✓ |
| —with kits of papers | | ✓ |
| —other (write in) | Assigning lessons | |
| 3. Giving content information | | |
| —a great deal | | |
| —infrequently | | ✓ |
| —other (write in) | ✓ Calls test words | |
| 4. Questioning | | |
| —principally factual | | |
| —frequently for problem-solving | | |
| —other (write in) | | |
| 5. Record-keeping on pupil achievement | | |
| —frequent and detailed | | ✓ (pupils assist) |
| —moderate | ✓ | |
| —other (write in) | | |
| 6. Testing of pupils | | |
| —for placement in instr. groups | | ✓ |
| —at end of major topics | | |
| —at end of semester/year | | |
| —other (write in) | Once a week | Reviews done by audio-tape |
| **Materials** | | |
| 1. —Books | ✓ | |
| 2. —Workbooks, sheets | | ✓ |
| 3. —Films/filmstrips/slides | | |
| 4. —Audio tapes/records | | ✓ |
| 5. —Kits | | |
| 6. —Pupil record-keeping system | | ✓ |
| 7. —Diagnostic/placement tests | | ✓ |
| 8. —Teacher's Manual | ✓ | ✓ |
| 9. —Other (write in) | | Inservice training materials |
| **Administration** | | |
| 1. Principal's role | | |
| —team leader | | |
| —providing logistic support | | Schedule use of media room ✓ |
| —other (write in) | | |
| 2. Special provisions of management (write in) | | |

| | Practice Using Current Materials | Projected Practice Using Product |
|---|---|---|
| **Parental Involvement** | | |
| 1. Assist in instruction | | |
| —as aides | ✓ | ✓ (in lower grades) |
| —as tutors | | |
| —other (write in) | | |
| 2. Assist in clerical work | | |
| —testing | | |
| —record keeping | | ✓ (in lower grades) |
| 3. General support | | |
| —by parental organization(s) | | |
| —by community organization(s) | | |
| —no special provisions | | |
| —other (write in) | Community supports basic skills program. | |

**Model and Strategy for Learning** (describe briefly)

| | |
|---|---|
| No consistent rationale for selecting words or sequencing of skills | Designers have selected words and ~~sequenced skills~~ so that student can generalize spelling and writing patterns. |

**Objectives** (write in as brief phrases)

| | | |
|---|---|---|
| 1. Cognitive skills | | |
| | 1. Master spelling of commonly-used words | 1. Master spelling of commonly-used words |
| | 2. Apply rules of spelling and symbol/sound associations | 2. Apply rules of spelling |
| 2. General cognitive development | | 3. Apply rules of 4 basic sentence patterns |
| 3. Attitudinal | | |